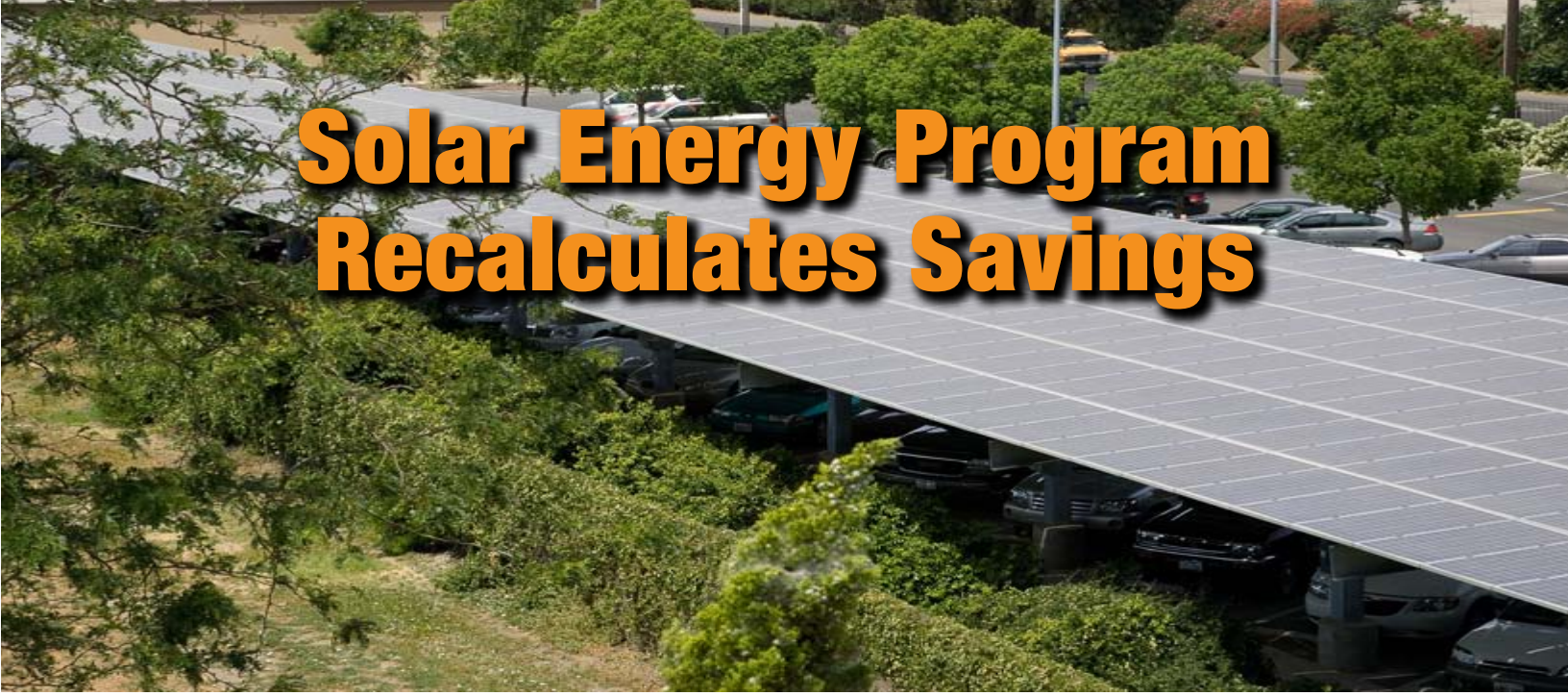

Solar Energy Program Recalculates Savings

A solar parking canopy was erected in 2007 next to the District 10 administration building in Stockton. It is one of 70 Caltrans photovoltaic projects funded by the Clean Energy Renewable Bonds Program administered by the IRS.

Ten years into a federally funded solar power program, Caltrans reports that installation costs were lower than expected, but so was energy generation. The result, according to a recent report, is that although 48 maintenance stations get their power from the sun, it will take six years longer than predicted for $14 million worth of solar panels to pay for themselves.

The Clean Energy Renewable Bonds (CREBs) Program is administered by the Internal Revenue Service. CREBs are a type of tax credit bond in which interest on the bonds is paid in the form of tax credits by the U.S. government. The proceeds for the issuance of the CREBs are available to finance renewable energy and clean coal facilities projects.

By January 2013, seven years after getting tax-credit bonds approved by the IRS, Caltrans had 70 photovoltaic projects up and running through CREBs, with a handful of significant solar projects outside of the program. Lower-than-expected construction costs and rebates enabled Caltrans to make a prepayment on outstanding CREBs, reducing its bond debt service from about $22.8 million to $12.4 million, according to the CREBs Program 2016 Annual Report released in April.

Despite that savings, after reassessing its actual electricity generation, Caltrans now estimates it will take 21 years, instead of 15, to fund the bond debt service and cost associated with the photovoltaic systems.

Since startup, the department upgraded its monitoring system from monthly manual readings to real-time online monitoring, allowing Caltrans to see that the intensity of light on a surface varies throughout the day, as well as day to day, affecting the output of the photovoltaic energy systems. To obtain a more realistic expectation of the overall system output and economic benefits, calculations were adjusted to consider factors such as standard test conditions, dirt and dust, temperature, sun angle and building orientation.

The original calculations were based on an average of eight hours of sunlight each day. But by following the guidelines of a California Energy Commission report, the average time of sunlight each day, used to calculate future energy production, was revised to approximately five hours each day.

Still, at peak usage, the 70 sites are expected to produce 2.4 megawatts of solar power, enough to power about 500 homes per year. Put another way, it takes 2.1MW to power 344 Caltrans maintenance stations and sand/salt storage sheds throughout the state. It just so happens that 46 of the 70 solar installations are at those maintenance stations.

For the life of the system, it is projected that Caltrans will save approximately $5.3 million. But the program does more than simply save money. It also helps Caltrans meet energy conservation goals and reduce greenhouse gas emissions as outlined in executive orders set by Gov. Edmund G. Brown Jr. Additionally, they support the state's renewable power statutes, "green power," electric grid demand, energy conservation, Leadership in Energy and Environmental Design (LEED) and climate change mandates.

Source: Clean Renewable Energy Bonds Program 2016 Annual Report